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parts, all orbits broadly, pronotum entirely, tegulae, mesopleurae, cephalic portion of mesosternum, legs entirely, and venter of abdomen, extending slightly onto lateral parts of terga; clypeus narrowly, roundly, deeply emarginate; median fovea deep oval pit; frontal crest sharp, well marked, linear, transverse, unbroken; ocellar basin depressed, flat, limited by linear walls; antennae with third and fourth segments subequal, fifth segment shorter; head and thorax setaceous, polished; wings hyaline; veins brownish, stigma and costa paler; procidentia small, rounded, not longer than wide.

Habitat: Ithaca, New York. No. 8.48(?)—1-1.

This species should be placed near *populi* Marl., but the color of the head and the length of the antennal segments will separate them.

LINYPHIIDAE OF ST. PAUL ISLAND, ALASKA.

BY RALPH V. CHAMBERLIN,

CAMBRIDGE, MASS.

While on St. Paul Island in 1910 Professor Harold Heath collected and sent to me the spiders here listed. They compose an interesting lot in which all the specimens belong to the family Linyphiidae. Ten species are represented, of which four are new, two of these being here made the types of genera. The previously known species are forms occurring on the adjoining mainland of North America or Asia, or on both. *Arctilaira bellans* new species (= *Hilaira glacialis* Kulczynski, nec Thorell) is an Arctic form occurring across Arctic America and Siberia, the present being its most southerly record. A new North American genus related to *Arctilaira* is also here described. All types are in the author's collection.

***Cornicularia clavicornis* Emerton.**

Trans. Conn. Acad., 1882, 6, p. 43, pl. 8, f. 7-76.

One male and one female.

***Erigone sibirica* Kulczynski.**

Mem. Acad. Imp. Sci., St. Petersburg., 1908, ser. 8, 18, p. 18, pl. 1, f. 9-12.

This species, to judge from the number of specimens in the lot, must be a common form on the island. The palpal organ of the males agrees completely with Kulczynski's description and figures. The

epigynum of the females, as noted by Kulczynski, is very close in form to that of *E. arctica* (White). The epigyna of the specimens from St. Paul Id., agree in their larger proportions with those of the typical Siberian specimens.

Ædothorax septentrionalis Kulczynski.

Gongylidium septentrionalis, Op. cit., p. 14, pl. 1, f. 18.

Several females.

Ædothorax nesides new species. Plate III, figs. 1, 2.

Male.—Carapace black or nearly so, the lighter ground color showing but weakly, the sternum similar. Legs fulvous. Palpus fulvous excepting the tarsus, which is blackish. Cephalothorax high; in side view it is seen to rise obliquely from eye area, then to become nearly horizontal to beginning of the posterior declivity. Clypeus slanting forward a little from eyes to lower margin, the latter in dorsal view appearing weakly convex; in height equalling the length of the median eye area. Posterior row of eyes slightly procurved; eyes equal and equidistant or very nearly so, the interval between each two being equal to the diameter of an eye. Anterior row of eyes with medians much smaller than the laterals, their diameters being to each other about as 2.5:4. Upper margin of furrow of chelicera with three large teeth, lower margin with five minute teeth. Palpal organ with embolus curving across end of bulb from mesal side to ectal and then back, its distal portion resting on the prominently exposed guide much as in, *e.g.*, the European *Æ. agrestis*. For paracymbium and other details see fig. 1. Tibia with a single simple broad process above which at tip curves slightly ectad. See fig. 2.

Length of cephalothorax, 1 mm.; width, .8 mm. Length of tib. + pat. II, .8 mm.

Genus **Aigola** new genus.

Tibia of male palpus wholly lacking processes. Cymbium with ectal margin incised toward distal end, forming a small lobe. Paracymbium large, curved, shortly and singularly more or less expanded or furcate at distal end and with a spur at base. Tegulum a broad, strongly chitinous plate lying along the mesal side of the retracted organ and curving ectad to the middle. Ectad of its mesal end is a membranous lobe which projects freely distoectad. At distal end of bulb a short, strongly chitinous, weakly curved apophysis. Embolus not exposed. Posterior row of eyes (males) straight or a little recurved; median eyes nearer to each other than to the laterals. Anterior row of eyes a little recurved, the median eyes smaller than the laterals and much closer together than to the latter. Clypeus high.

GENOTYPE.—*A. pauliana* n. sp.

Includes also *A. tuberella*, nom. nov. pro *Gongylidium tuberosum* Em., preoccupied by *G. tuberosum* (Blackwall).

Aigola pauliana new species. Plate III, figs. 3, 4.

Male.—Carapace dusky over fulvous, appearing brown. Sternum more fulvous, darker about margins. Legs like sternum. Abdomen black. Head gently convexly rising behind eyes. Posterior row of eyes straight or very slightly procurved; the medians in the type are slightly more (about one eighth) than their diameter apart, and between 1.4 and 1.5 times their diameter from the laterals; slightly smaller than the laterals. Anterior row of eyes recurved; median eyes close together, less than their radius apart, a little more than their diameter (eleven and one seventh) from the laterals, smaller than the latter, the ratio of diameters being about as 7:10. Clypeus three times higher than the diameter of a lateral eye and considerably higher than length of median eye area. Area of median eyes a little longer than wide (12:11) and wider behind than in front in ratio 11:8. Upper margin of the furrow of chelicera bearing six teeth, a very small one appearing at distal end of series as it is present in *tuberella* and one at proximal end which is large though smaller than the adjacent one. Details of the palpal organ are shown in the figs. 3 and 4.

Length, 3.2 mm.

Length of cephalothorax, 1.57 mm.; width, 1.16 mm.

Length of tib. + pat. I, 1.55 mm.; of tib. + pat. IV, 1.6 mm.

Length of tib. I, 1.35 mm.; of tib. IV, 1.42 mm.

Aigola tuberella new name. Plate III, figs. 5, 6.

Gongylidium tuberosum Emerton, Trans. Conn. Acad., 1915, 20, p. 150, Pl. 5, figs. 5-56.

Male.—Posterior row of eyes a little recurved. Eyes larger and nearer together than in *pauliana*, the medians about three-fifths their diameter apart, and 1.4 times their diameter from the laterals. Anterior row of eyes very slightly recurved; median eyes smaller than laterals in about ratio 9:11 or 4:5, nearly their radius apart and one and one-fourth their diameter from the laterals. Clypeus about three and one-half times as high as diameter of an anterior lateral eye. Area of median eyes as broad as long, wider behind than in front in ratio 7:5.

Upper margin of furrow of chelicera with four teeth.

Length of cephalothorax, 2 mm.; width, 1.44 mm.

Length of tib. + pat. I, 1.98 mm. F. of tib. + pat. IV, 2.16 mm. Length of tib. I, 1.59 mm. F. of tib. IV, 1.75 mm.

Locality.—Labrador: Battle Harbor. (C. W. Leng.)

The type is larger than that of *pauliana*, but the cephalothorax and legs agree nearly in proportions. The posterior median eyes are

clearly closer together than in the genotype, as indicated in the description above. A difference to be noted is that only four teeth are present along the upper margin of the furrow of the chelicera as against six in the genotype. The palpal organ differs in the form of paracymbium, as in lacking a ventral prong or lobe at distal end as shown in the figures. It also differs in various other details; e.g., at the distal end of the bulb it has a prominently projecting lobe not obvious as such in *pauliana*, this lying just within the free membranous lobe, as shown in fig. 5, where it is just at the left of the terminal apophysis, and extends distad beyond the other parts.

Genus **Anitsia** new genus.

A genus suggesting *Catabrithorax* in its broad thorax and head, though the latter is more elevated with sides steeper. It also resembles that genus in the structure of the male palpal organ, the median lobe of the bulb giving rise to a similar membranous process which bends forward freely beneath the bulb, though in the present genus this process is broader and shorter, and free for a shorter distance. The median dorsal process of the tibia of the male palpus lacks the characteristic strong curvature of that in *Catabrithorax*. From the latter the genus differs conspicuously in the eyes. Both rows are straight or nearly so. The eyes, instead of being close together, are widely separated. Eyes of posterior row nearly equidistant, separated by clearly more than their diameter, sometimes by much more. Anterior median eyes smaller than the laterals, near to each other but more than their diameter from the laterals. Lateral eyes separated by a narrow space. Area of median eyes trapeziform, longer than wide. Height of clypeus typically a little exceeding the length of the quadrangle of median eyes. Sternum prolonged between the posterior coxæ.

GENOTYPE.—*A. abjecta*, n. sp.

Includes also the Siberian *Erigone mendica* of Koch.

Anitsia abjecta new species. Plate IV, figs. 8-10.

Male.—Carapace and sternum blackish, as is also the abdomen. Legs brownish yellow. Cephalothorax broad, head considerably broader than length of eye rows, much as in *Catabrithorax*. Head moderately high with sides steep. Posterior row of eyes slightly procurved; eyes equidistant, the interval between each two exceeding the diameter of a median eye about as 7:5;

median eyes smaller than the laterals. Area of median eyes longer than wide (10:9), wider behind than in front in the ratio 4:3. Anterior median eyes much smaller than the laterals and much nearer to each other, being about their radius apart but more than their diameter from the laterals. Clypeus a little higher than length of area of median eyes. Upper margin of furrow of chelicera with five large teeth; lower margin with a series of close-set minute teeth situated well toward base of fang. Details of palpus as shown in figs. 8, 9, and 10.

Female.—Epigynum as shown in fig. 7.

Length of cephalothorax of male type, 1 mm.; width, .8 mm.

Length of tib. + pat. I, .8 mm.; of tib. + pat. IV, 1 + mm.

A. mendica (Koch) differs in the more widely separated eyes of the posterior row. The male differs obviously in the characters of the palpus as e.g., in the median dorsal apophysis of the tibia, which is much more slender and has on each side another process of characteristic form.

Genus **Arctilaira** new genus.

Agreeing with *Utopiellum* Strand in the form of the cephalothorax. The latter in the male is similarly depressed between and caudad of the eyes in front of the cephalic elevation. Posterior row of eyes strongly procurved, the eyes widely separated. Lateral eyes prominently elevated on common tubercles. Upper margin of furrow of chelicera with five teeth of which the uppermost is reduced, the lower margin with three small, often granular, teeth, the dentition alike in the two sexes. Chelicera of male not armed in front. Metatarsi of leg I in the male curved and strongly spined. Tibia of male palpus much thicker than patella, enlarged distad, at distal end above with a very prominent prolongation above the tarsus. Third division of bulb with a prominently elevated and more or less complicated lobe which extends to or beyond the tip of the cymbium. Epigynum short and broad, not prolonged freely behind the epigastric furrows.

GENOTYPE.—*Arctilaira bellans* sp. nov.

The genus is quite obviously nearest *Utopiellum* (Strand, 1901), which was established with the *Erigone mirabilis* of Koch as genotype, but in the structure of the copulatory organs in particular is quite distinct. In *Utopiellum* the terminal lobe of the bulb of the male palpus, so conspicuously developed in *Arctilaira* and *Hilaira*, is obsolete, thus leaving the distal part of the alveolus empty and freely exposed; while there is present across the distal end of the bulb and

curving freely distad from its outer edge a conspicuous, smooth, distally acuminate blade. The females of *Utopiellum* have the epigynum elongate and narrowed caudad and prolonged much behind the epigastric furrow. In addition to the genotype, the *Gongylidium curvitaris* of Emerton belongs clearly to this genus and will accordingly stand as *Utopiellum curvitaris* (Emerton).

Arctilaira bellans new species.

Hilaira glacialis Kulczynski (nec Thorell 1871), Mem. Acad. Imp. Sci. St. Petersburg, 1908, 18, no. 7, p. 25, pl. 2, f. 45, 48, 49.

A male and several females of this Arctic species, which has a distribution across Siberia and Arctic America. It is the form described by Kulczynski in the place above cited under the name *Hilaira glacialis*, but is apparently not the *Hilaira glacialis* of Thorell according to the description of a male of this species given by Simon.¹

Tmeticus armatus Banks.

Proc. Ent. Soc. Wash., 1906, 7, p. 98.

One female.

Genus **Montilaira** new genus.

Cephalothorax suggesting that of *Arctilaira*, but the tubercles of the eyes less prominent and the median depression in front of the postocular elevation less marked. Posterior row of eyes straight, the eyes well separated, the medians nearer to each other than to the laterals. Upper margin of furrow of chelicera armed with five large teeth, the lower margin with five minute teeth, alike in male and female. Chelicera of male armed in front. Metatarsi of all legs unarmed in both sexes. Tibia of each leg of the first three pairs typically armed above with two spines, that of each fourth leg with but one. Palpus of male with tibia enlarged as in related genera, its dorsal distal margin extended only as a short wide plate or lobe which may be angulate or toothed or not. Bulb characterized especially by the presence of a median apophysis which is strongly pectinate on ventral surface and especially along mesal edge, this apophysis lying against the conductor and its marginal teeth protecting the embolus. Epigynum in form of a strongly chitinized plate turned forward from posterior border and presenting its free edge cephalad.

¹ Bull. Mus. Hist. Nat., 1908, p. 505.

GENOTYPE.—*Hilaira uta* Chamberlin.

Differs from *Hilaria* sens. str., in the possession of five minute teeth along lower margin of furrow of chelicera instead of three, the presence of a single spine only above on tibia IV instead of two, the presence of an anterior process on chelicera of male, the much less developed dorsal distal lobe of the tibia of male palpus and particularly the structure of the bulb of the palpus. In the arrangement of eyes very similar to *Hilarotes* (Hull, 1909), though the lateral eyes of the latter are not on tubercles and the middle region of the head in front of elevated region is not depressed. *Hilarotes*, as typified by *reproba* (Cambridge), a species included by Simon in *Hilaira* sens. lat. (Hist. Nat. Araign., I.), is otherwise distinguished in having but three, moderately large, teeth along lower margin of furrow of chelicera, the presence of two dorsal spines on tibia IV, etc.

In addition to the genotype, one other species is known to me at present as belonging to *Montilaira*, this being *Erigone perplexa* Keyserling, of which the *Tmeticus pectinatus* of Emerton seems to be a synonym. The two species are very close in general structure but differ in various details. Thus the males are readily distinguishable by the difference in the anterior dorsal lobe of the tibia of the male palpus, this presenting a conspicuous median tooth in *perplexa* with an angulation each side, whereas the margin is evenly rounded in *uta*, as shown in figs. 12 and 11. The median embayment in the anterior free edge of the epigynal plate is deeper and at bottom broader in *perplexa* than in *uta*. The paired claws (leg I) in *uta* have each typically eight teeth, in *perplexa* but six, etc.

Microneta heathi new species. Plate IV, fig. 13.

Carapace dusky over fulvous, blackish along borders. Legs fulvous. Abdomen blackish. Posterior row of eyes procurved; median eyes larger than the laterals (about 3.7:3), a little more than three-fourths their diameter apart (3:3.7), a little nearer to the laterals. Anterior row of eyes a little procurved, the summits of the eyes forming a nearly straight line; median eyes much smaller than the laterals, the diameters being about as 2.5:4; less than their diameter apart, their diameter from the laterals. Area of median eyes trapeziform, wider behind than in front in the ratio 9:6.5, equal in length and width, or the length slightly greater. Clypeus lower than the width of the median eye area in front. Unpaired claw (first leg) with a single tooth beneath; paired claw with twelve short teeth which increase in length in going distad, the longest of these not quite equalling the diameter of the contiguous

part of the claw. Sternum strongly convex, subtriangular, prolonged behind between fourth coxæ; obtusely angularly excavated in front, extending forward each side of labium, the border of excavated part slanting steeply. Clypeus depressed below the anterior eyes which thus protrude over its upper part from where it slants to the lower margin, which in dorsal view is nearly straight. Upper margin of furrow of chelicera with three well-separated teeth, the lower margin with five very minute teeth in a close-set series the length of which but little exceeds half the length of the upper series. Epigynum large and prominent, as shown in fig. 13.

Length, 1.74 mm.; width, .7 mm.

Length of femur I, .93 mm.; of tib. + pat. I, 1 + mm.; of tib. I, .86 mm.; of met. I, .8 mm.; of tar. I, .63 mm.

Bathypantes brevipes (Emerton).

Diplostyla brevipes Emerton, Can. Ent., 1917, p. 267, fig. 19, 3, 4 and 8.

Two males and several females.

The species also occurs on Vancouver, Id., the type locality, and on the mainland.

EXPLANATION OF PLATES III AND IV.

PLATE III.

Edothorax nesides n. sp.

Fig. 1. Palpus of male, ectal view.

Fig. 2. Tibia of palpus of male, dorsal view.

Aigola pauliana n. sp.

Fig. 3. Palpus of male, ventral view.

Fig. 4. The same, view a little ventrad of ectal.

Aigola tuberella n. n.

Fig. 5. Palpus of male, view same as in 4.

Fig. 6. Mesal end of paracymbium, mesal view.

Anitsia abjecta n. sp.

Fig. 7. Epigynum.

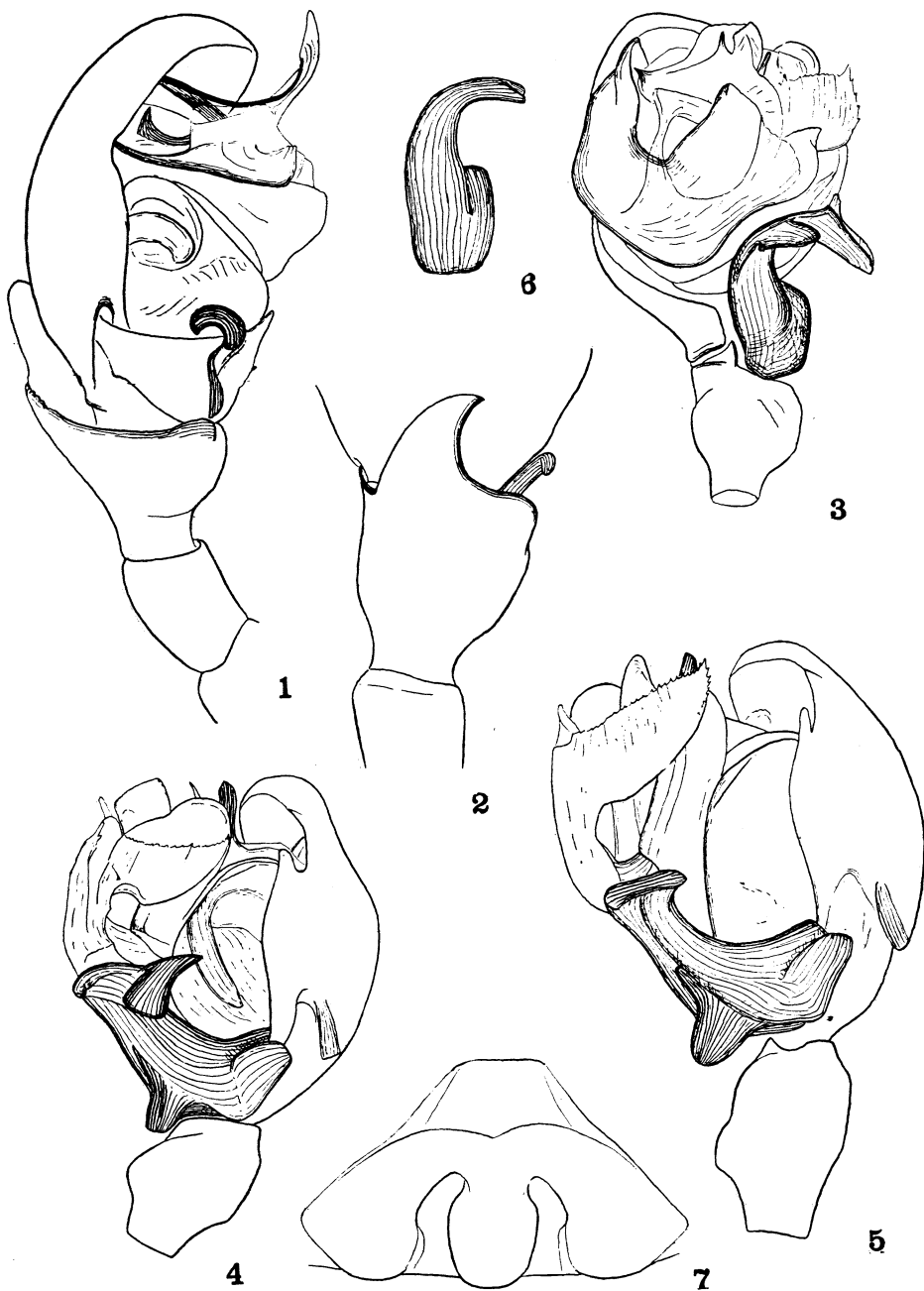
PLATE IV.

Anitsia abjecta n. sp.

Fig. 8. Right palpus of male, ventral view.

Fig. 9. Left palpus of male, ectal view.

Fig. 10. Tibia of palpus of male, dorsal view.



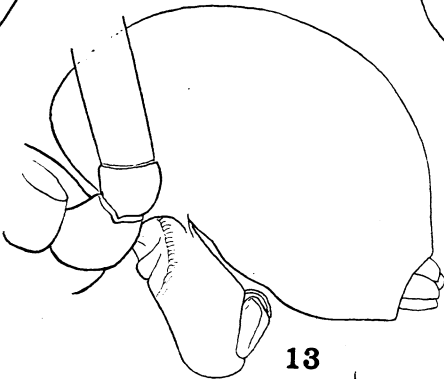
(LINYPHIIDAE.)



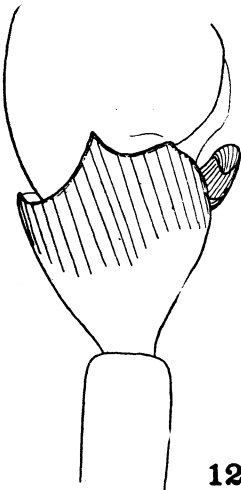
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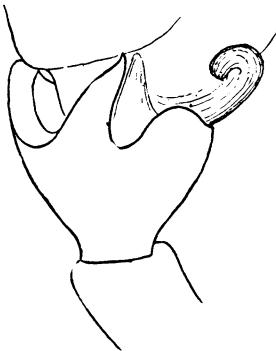
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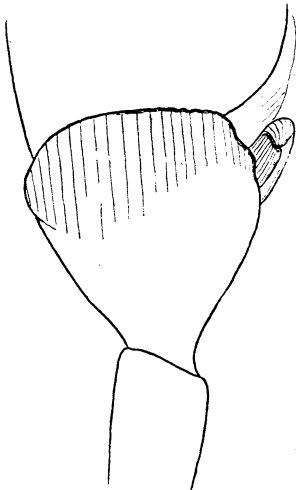
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12



10



11

(LINYPHIIDAE.)

Montilaira uta (Chamberlin).

Fig. 11. Tibia of palpus of male, dorsal view.

Montilaira perplexa (Keyserling).

Fig. 12. Tibia of palpus of male, dorsal view.

Microneta heathi n. sp.

Fig. 13. Lateral view of abdomen, with epigynum, of female.

AN ANNOTATED LIST OF THE CICADAS OF COLORADO WITH DESCRIPTION OF A NEW SPECIES.

BY WM. T. DAVIS,

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In the summer of 1919 the American Museum of Natural History sent a collecting party to Colorado, and among the insects secured by Dr. Frank E. Lutz and his two companions Messrs. Herbert F. Schwarz and Pearce Bailey, Jr., were twelve species of Cicadas. Dr. Lutz has kindly turned these over to me for determination. In the summer of 1920 Dr. Lutz secured an additional species. Prof. Theodore D. A. Cockerell has sent me several species collected in the state, one of which is here described as new, and has also furnished the names of three fossil species. To Prof. C. P. Gillette and Prof. Charles R. Jones of the Colorado Agricultural College, I am indebted for the loan of specimens representing nine species. To these sources of information have been added records made by the writer from specimens in his own collection, or sent to him at various times for determination. These last are acknowledged in connection with the several records.

There are a few species found in the eastern half of Kansas, and also in Nebraska, that do not appear to reach Colorado, but on the other hand some of the recorded species of *Okanagana* probably do not extend eastward of the mountainous regions of the state. Twenty-three species are here recorded, but only two of them, namely *Tibicen linnei* and *Tibicen canicularis*, are of the fauna of the Atlantic states. The majority of the others mentioned are confined